INDEX OF AUTHORS

Volume 21

June 1958 • December 1958

Journal of the National Cancer Institute

Page numbers in italics indicate senior authorship

Achinstein, Betty, 585
Adams, Mabelle E., 879
Allam, M. W., *1149*
Amos, D. Bernard, *657*
Andervont, Howard B., *783*
Axelrad, A. A., 1065
Azarnoff, Daniel L., *1109*

Bayreuther, Klaus, *885*
Bittner, John J., *631*
Boone, Irene U., *513*
Bryant, Jay C., *331*, *349*, 429
Burk, Dean, 475, 485
Burstone, M. S., *523*

Canter, Harry Y., 783
Carpenter, Harry M., 17
Chu, Ernest H. Y., *729*
Cobb, Jewel Plummer, *263*
Cole, Leonard J., 279
Congdon, C. C., *193*
Coriell, Lewis L., 541
Curran, George L., 1109

Dawe, Clyde J. *753*
Defendi, Vittorio, *925*
de Vries, M. J., *1117*
Dodge, B. G., 1161
Dunn, Thelma B., 783

Earle, Wilton R., 331, 349, 429, 579, 611, III (Sept.), 729
Evans, Virginia J., 579, 611

Fekete, Elizabeth, 365
Feldman, Michael, 563, *697*
Fioramonti, Mary C., *579*, 611
Ford, Denys K., *393*

Gengozian, N., 193
Gershbein, Leon L., *295*
Godfrey, Jamie E., 641
Goldin, Abraham, *495*
Goodwin, Wilma L., 879
Graham, Saxon, 713
Greenfield, Robert E., *641*, *1099*
Griffin, A. C., 1161
Grunmeier, Paul W., 541

Haenszel, William, *213*, *825*
Hare, William V., 999
Harris, Payne S., 513
Hauschka, Theodore S., *77*
Hill, Jack H., *1169*
Hoffman, Howard E., 1161
Hollcroft, Joanne W., *311*
Hsu, T. C., *437*
Humphreys, Stewart R., 495

Isler, H., *1065*

Kampschmidt, Ralph F., *879*
Kimball, A. W., *383*
Klatt, Oleta, 437
Klein, Eva, 885
Kosak, Alvin I., 557

Landau, Bernard, 475, *485*
Lasfargues, Etienne Y., *1131*
Laszlo, John, *475*, 485
Leblond, C. P., 1065
Leighton, Joseph, 753
Levan, Albert, 77
Lewis, Yevette S., *813*
Lilienfeld, Abraham M., *713*
Lombard, L. S., 1149

485282—58——17

McAllister, Robert M., *541*
Makinodan, T., 193
Mantel, Nathan, 495, 825
Marshak, Robert R., 541
Mori-Chavez, Pablo, *985*

Nandi, Satybrata, *1039*
Nelson, Norton, 557
Newman, Melvin S., *721*

O'Neal, M. A., *1161*
Orris, Leo, *557*
Otsuka, Sei, 721
Ozzello, Luciano, 1131

Peppers, E. V., 429, *611*
Pine, Ellen Kann, *973*
Polissar, Milton J., 595
Potter, Michael, 753
Pradhan, Sachindra N., 585
Price, Vincent E., 641, 1099

Quastler, Henry, 813

Ranadive, Kamal J., 1151
Rask-Nielsen, Ragna, *1083*
Reid, James C., 63
Rice, Mary E., 137, 163, *961*
Rogers, Betty S., 513
Russell, Elizabeth S., *365*

Sachs, Leo, *563*
Sanford, Katherine K., 729
Santos, George W., *279*
Schilling, Edward L., 331, 349, 429
Schmitt, F. L., 557
Sharpless, G. R., 925
Shear, Murray J., *585*
Shekarchi, I. C., 193
Shelton, Emma, *137*, *163*, 961
Shimkin, Michael B., *595*, 825
Shirer, J. F., 1149
Smith, Willie W., 311
Snell, George D., *843*
Snell, Katharine C., 999
Stengle, James, 485
Sterling, William R., 1099
Stewart, Harold L., *999*
Stubbs, E. L., 1149
Svihla, George, 813

Toal, Jane Nicolet, 17, *63*

Urso, I. S., 193

Van Duuren, Benjamin L., *1*, 557, *623*
Venditti, John M., 495
Vos, O., 1117

Wakefield, June D., 657
Walker, Dorothy G., 263
Waravdekar, Susheela S., *1151*
Westfall, B. B., *429*, 611
White, Julius, 17, 63
White, Laurens P., *671*, *685*
Wight, Kent, 475
Williams, R. Bland, Jr., *17*, 63
Williamson, William P., 1109

Yaffe, David, 697
Yerganian, George, 393

INDEX OF SUBJECTS

Volume 21

July 1958 • December 1958

Journal of the National Cancer Institute

Actinomycin D, effect of, on normal and neoplastic tissue *in vitro*, 263
Age, influence on production of thyroid tumors in the rat, 1065
Aldolase:
in serum,
changes in cancer and other diseases, 671
significance of abnormalities in cancer patients, 685
Algire, Glenn Horner, obituary and bibliography, III–VI, Sept.
Amino acid(s):
inhibition of intracellular concentration of azaserine in drug-sensitive reticular neoplasm, 973
in tissue-culture fluids, during growth of NCTC 929 cells, 429
Anemia:
of cancer, response to iron and cobalt administration, 879
(secondary to neoplastic disease) distribution of radioiron in tumor-bearing rats and mice, 641
of tumor-bearing animal, mechanism of erythrocyte destruction in, 1099
Announcements:
Clinical Conference on Cancer Chemotherapy, 621
Precollegiate Summer Science Program, 1037
Summer Program for College and Secondary School Students, 1037
Symposium on Fundamental Cancer Research, 427
Two-Week Course in Cancer Chemotherapy, 427
Antibody(ies):
cytotoxic, nature of, role in destruction of tumor homografts, 563
diffusion into peritoneal fluid and into chambers, 657
Antigen(s) *see also* Antibody; Immunity studies:
histocompatibility system in mice, 843
iso (——),
histocompatibility-determined, in relation to transplantability of specific variants of MSWB sarcoma, 885
reaction of, in irradiated recipient to homologous hematopoietic cells, 697
relation to antibody production and tumor transplantability, 563
Antimetabolites *see* Azaserine; 2-Deoxy-D-galactose; 2-Deoxy-D-glucose
Antitumor agents *see* Colchicine; Methyl-bis(2-chloroethyl)amine; Polysaccharides; Podophyllotoxin; Urethan
Ascites tumor(s) *see also* Krebs-2 carcinoma:
cell volume measurement, 961
chromosome characteristics in cells of, 77
lymphomas,
growth curves and invasive capacities of #1, #2, and L1210 of mouse, in relation to invasiveness, 137
growth rates in diffusion chambers, 657
non-tumor cell population of, 163
reticulum-cell sarcoma, P329, history, morphology, and growth progression of, 753
Azaserine, concentration of, in cells of reticular neoplasms in relation to their drug resistance or sensitivity, 973
Azo dyes *see also* *N*-2-Fluorenyldiacetamide:
acid phosphatase and phosphamidase, in rat, mouse, and human tissue, technique for localizing with, 523

Benz[*a*]anthracene (1,2-benzanthracene), reactivity with maleic anhydride and carcinogenicity of various methyl derivatives, 721
Benzo[*c*]phenanthrene (3,4-benzophenanthrene), in cigarette-smoke condensates, 623
Benzo[*a*]pyrene (1,2-benzpyrene), content in cigarette-smoke condensates, 1, 557
Benzo[*e*]pyrene (3,4-benzpyrene), content in cigarette-smoke condensates, 1, 557
Blood:
erythrocytes labeled with Fe^{59}, distribution of Fe^{59} after injection into tumor-bearing rats and mice, 641
glucose levels in cancer patients infused with 2-deoxy-D-glucose, 485
pressure, effect of bacterial polysaccharide, podophyllotoxin, and colchicine on carotid blood pressure, 585
Bone:
——— marrow,
injection of, from isologous mouse or rat, effect on survival in lethally irradiated mice, 279
regeneration of lymphatic tissue in X-irradiated mice following intravenous injection of, 193
treatment of lymphosarcoma by total-body irradiation and injection of, 1117
Brain tumor(s):
glioblastoma multiforme in one estrogen-treated mouse, 783
incorporation of acetate-1-C^{14} into cholesterol by, 1109

Cancer *see also* Gastric tumors; Lung tumors; Brain tumors:
enzymes, glycolytic, serum changes in, 671
significance of abnormalities in patients, 685
Carcinogenesis *see also* Names and types of tumors:
chemical carcinogens,
1,2-benzanthracene (benz[*a*]anthracene) methyl derivatives of, 721
benzo[*a*]pyrene, effect on mouse skin, 557
benzo[*e*]pyrene, effect on mouse skin, 557
N-2-fluorenyldiacetamide-fed rats, role of pituitary in, 1161
Carcinogenesis—Continued
chemical carcinogens—Continued
methylcholanthrene, intramural injection in stomach of mice, 999
pyrene, effect on mouse skin, 557
testing of carcinogenic hydrocarbons by effect on liver regeneration, 295
Carcinogens *see* Benz[*a*]anthracene; Dibenz[*a,h*]anthracene; Benzo[*a*]pyrene; Benzo[*e*]pyrene; Dibenzo[*a,i*]pyrene; *N*-2-Fluorenyldiacetamide; Methylbis(2-chloroethyl)amine hydrochloride; Methylcholanthrene; Pyrene; Urethan
Cell(s):
division *see* Mitosis
volume of ascites tumor, measurement of, 961
Cervix, cancer of, circumcision status of sexual partner, validity of determination by questionnaire, 713
Chemotherapy *see also* Antimetabolites; Antitumor agents:
agents, lists of, comparing antileukemic efficiency with that of amethopterin, 495
assay, quantitative, for comparing effectiveness of antileukemic agents, 495
2-deoxy-D-glucose, metabolic and pharmacologic effects of, in patients with cancer, 485
in tissue culture, primary *vs.* established cultures as tool in testing antitumor agents, 263
Chicken lymphomatosis *see* Lymphoid tumors; Virus, avian lymphomatosis
Cholesterol, synthesis of, by intracranial tumors, 1109
Chromosome(s) *see also* Genes; Genetics:
and transplantability of tumors, variation in number and form in relation to, in variants of MSWB sarcoma, 885
of Chinese hamster, changes in morphology of, during growth of cells *in vitro*, 393
mammalian chromosomes *in vitro*, study of in high and low sarcoma-producing cell strains derived from mouse, 729
number and morphology of, in five murine cell strains cultivated *in vitro*, 437

Chromosome(s)—Continued
of reticulum-cell sarcoma, P329, comparison of chromosome number *in vivo* and *in vitro*, 753
variability among clones of Krebs-2 and Ehrlich mouse ascites tumors, 77
Chrysene, derivatives in cigarette-smoke condensates, 623
Cigarette smoke *see also* Smoking:
carcinogenicity for mouse skin, 557
condensates, polynuclear aromatic hydrocarbons in, 1, 557, 623
Circumcision status *see* Cervix, cancer of
Colchicine, effect on carotid blood pressure in mice, 585

Demography of cancer, variation in incidence and mortality, 213
2-Deoxy-D-galactose, inhibition of glycolysis in leukocytes, leukemic cells, and tumor cells by, 475
2-Deoxy-D-glucose:
inhibition of glycolysis in leukocytes, leukemic cells, and tumor cells by, 475
metabolic and pharmacologic effects in cancer patients receiving infusions of, 485
Diagnosis:
tests, diagnostic cancer,
flocculation test, reaction of Eisenstaedt, 1169
Dibenz[*a*,*h*]anthracene (1,2,5,6-dibenzanthracene):
in cigarette-smoke condensates, 623
in lung carcinogenesis, growth rate of tumors induced in mice, 595
Dibenzo[*a*,*i*]pyrene (3,4,9,10-dibenzpyrene), subcutaneous tumor induction by, in mice, 1151
Drug resistance, intracellular concentration of azaserine by resistant and sensitive reticular neoplasms, 973

Ehrlich ascites tumor(s), cytology of clones, 77
Endotoxins *see* Toxins
Enzyme(s) *see also* Names of:
glycolytic, serum
changes in cancer and other diseases, 671
significance of abnormalities in cancer patients, 685
Epidemiology:
circumcision status, validity of determination by questionnaire, 713
gastric cancer, variation in incidence and mortality, 213
Epithelium:
of rat intestine, changes in,
morphology and mitotic rate following X irradiation, 17
nucleic acid and protein synthesis in relation to cell division, 63
Estrogen(s) *see also* Hormones:
induction of mammary tumors in agent-free mice, 783

Fluoranthene, derivatives in cigarette-smoke condensates, 1, 623
Fluorene, derivatives in cigarette-smoke condensates, 1, 623
N-2-Fluorenyldiacetamide, liver, harderian-gland and ear-duct tumors induced in male rats by, prevention of hypophysectomy, 1161
Fowl tumors *see* Lymphoid tumors; Virus, avian lymphomatosis

Gastric tumor(s):
carcinogenesis by MCA, in mice, histopathogenesis in glandular mucosa, 999
malignancies in human stomach, variation in incidence and mortality, 213
Gastrointestinal tract *see also* Stomach:
effect of X irradiation on cells of rat jejunum, 813
epithelium of rat intestine,
changes in morphology and mitotic rate following X irradiation, 17
changes in nucleic acid and protein synthesis in relation to cell division, 63
Gene(s) *see also* Chromosomes; Genetics:
histocompatibility genes,
isogenic resistant lines, production and analysis of, 843
Genetics *see also* Chromosomes:
genotype, effect of *W*-series on ovarian tumorigenesis, 365
inheritance, of hormonal patterns stimulating or inhibiting mammary-tumor development in mice, 631
strains (of mice),
isogenic resistant lines, production and analysis of, 843
in susceptibility to estrogen-induced mammary tumors, 783

Genetics—Continued
tumor incidence,
in relation to ovaries, 365
mammary, influence of hormonal pattern, 631
Glucose:
analogues, as glycolytic inhibitors in leukocytes, leukemic cells, and tumor cells, 475
in tissue-culture fluids during growth of NCTC 929 cells, 429
utilization, related to cell growth in fluid-suspension cultures of mammalian cells, 349
Glutamic oxalacetic transaminase:
serum,
changes in cancer and other diseases, 671
significance of abnormalities in cancer patients, 685
Glutamine, effect of lack of, in tissue culture of subline 2071 mouse cells in protein-free medium, 611
Grafts, *see also* Transplantation:
hematopoietic tissue in protection against lethal radiation, immune reactions of, 697
homografts, of tumor, role of cytotoxic antibodies in destruction of, 563
Growth:
rate of,
lung tumors in mice, 595
mammalian cells in fluid-suspension cultures, 331, 349

Hamster, Chinese, chromosomes of, changes in during cultivation *in vitro*, 393
Hemorrhage, in transplanted tumors, as mechanism in production of anemia, 1099
Histiocytes, intracellular growth of lymphoma cells within, 137
Histocompatibility *see also* Transplantation:
variability among clones of Ehrlich and Krebs-2 mouse ascites tumors, 77
Hormones:
effect of on development and function of mammary glands in mice, 1039
inherited hormonal patterns, influence on mammary-tumor incidence in mice, 631
Hydrocarbons (carcinogenic) *see als* Names of:
effect of, on liver regeneration, 295
in cigarette-smoke condensates, 1, 557 623

Immunity studies:
diffusion chamber, penetration of antibodies into, against ascites tumors *in vivo* and *in vitro*, 657
immune serum, heterologous against HeLa cells, tested *in vivo* and *in vitro*, 541
inbred mice carrying histocompatibility alleles, isogenic resistant lines, typing of, 843
resistance to transplanted tumors, effect of shielding in irradiated mice, 513
serologic reactions, Eisenstaedt test, 1169
tumor (———),
nature of cytotoxic antibodies and role in destruction of tumor homografts, 563
in X-irradiated mice, immunological response of homologous hematopoietic tissue to irradiated recipient, 697
Immunogenetics *see also* Immunity studies; Genetics:
production and analysis of isogenic resistant lines, 843
studies on X-irradiated mice treated with homologous hematopoietic cells, 697
Intestine *see* Gastrointestinal tract
Iodine, intake, influence on production of thyroid tumors in the rat, 1065
Iron:
distribution of radioiron after injection of labeled erythrocytes into tumor-bearing animals, 641
metabolism in anemia of tumor-bearing animals, 1099
Isocitric dehydrogenase, serum, changes in cancer and other diseases, 671

α-Ketoglutamic acid, in tissue-culture fluids during growth of NCTC 929 cells, 429
Krebs-2 carcinoma:
ascites tumors, cytology of clones, 77
glucose analogues inhibiting glycolysis of, 475

Lactic acid, in tissue-culture fluids during growth of NCTC 929 cells, 429
Lactic dehydrogenase:
serum,
changes in cancer and other diseases, 671
significance of abnormalities in cancer patients, 685
Lesions, hepatic, and in other organs of chick embryos infected with RPL12 lymphomatosis virus, 925
Leukemia *see also* Lymphoid tumors; Reticulum-cell sarcoma:
incidence in man, effect of X irradiation, 383
infusion of 2-deoxy-D-glucose in patients with, 485
in hybrid mice bearing thymic transplants from thymic strains, 1083
leukemic tissue, inhibition of glycolysis of, by 2-deoxy-D-glucose and 2-deoxy-D-galactose, 475
spontaneous, effect of high altitude on incidence, 985
transplantation, in irradiated homologous hosts, effect of shielding, 513
Liver:
injection of, from isologous mouse or rat, effect on survival in lethally irradiated mice, 279
regeneration, effect of carcinogenic hydrocarbons on rate of, 295
Liver tumor(s), prevention in male rats fed *N*-2-fluorenyldiacetamide, 1161
Lung tumor(s):
bronchogenic carcinoma, infusion of 2-deoxy-D-glucose in patients with, 485
growth in mice, 595
smoking in relation to lung cancer, in women, 825
Lymph node (cells), treatment of lymphosarcoma by total-body irradiation and injection of, 1117
Lymphoid tissue, regeneration of, in lethally X-irradiated mice following intravenous injection of spleen and bone marrow, 193
Lymphoid tumor(s) *see also* Ascites tumors; Leukemia:
leukemia L1210 of mouse,
effect of glucose analogues on glycolysis of, 475
evaluation of chemotherapeutic agents against, 495
Lymphoid tumor(s)—Continued
leukemia L1210 of mouse,
growth curves in relation to invasiveness, 163
growth rates in diffusion chambers, 657
invasive capacity in diffusion chambers, 137
lymphocytic neoplasm #288 of mouse, effect of glucose analogues on glycolysis of, 475
lymphoma #1 and #2,
growth curves in relation to invasiveness, 163
invasive capacity in diffusion chambers, 137
lymphomatosis, avian, RPL12 virus, cytopathogenic effects of, in chick embryos and chick-embryo tissue cultures, 925
lymphosarcoma, R2788, distribution and mechanism of anemia production in animals bearing transplants of, 641,1099
non-tumor cell population in lymphomas #1 and #2 and leukemia L1210, 163
treatment with total-body irradiation and injection of bone marrow and lymph-node cells, 1117
Lymphomatosis (avian) *see also* Virus:
virus of, in embryos and tissue-culture morphology and cytochemistry, 925

Mammary gland(s), development and function of, in mice, endocrine control of, 1039
Mammary tumor(s):
genetic influence on inherited hormonal patterns in mice, 631
incidence and occurrence of,
hormonal influence, inherited, in mice, 631
in milk-agent-free mice estrogen-induced, 783
tissue culture of, human, 1131
Mammary-tumor agent, agent-free mice, mammary-tumor development in, induced by estrogen, 783
Methyl-bis(2-chloroethyl)amine hydrochloride, in lung carcinogenesis, growth rate of tumors induced in mice, 595
Methylcholanthrene, in carcinogenesis of adenocarcinoma, of glandular stomach in mice by intramural injection, 999
Microscopy, ultraviolet, of cells of rat jejunum following X irradiation, 813

Mitosis:
radiation-induced changes in nucleic acid and protein synthesis in relation to, 63
rate of in intestinal epithelium, effect of X irradiation on, 17
Mortality *see* Statistics

Naphthol AS-phosphates, in histochemical demonstration of acid phosphatase by azo-dye method, 523
Nitrogen mustard *see* Methyl-bis(2-chloroethyl)amine hydrochloride
Nucleic acid synthesis, effect of X irradiation on, in rat intestine, 63

Obituary: Algire, Glenn Horner, III–VI, Sept.
Ovarian tumor(s), genetics, influence of *W*-series of genes, 365
Oxygen, tension, lowered, effect of high altitude on incidence of leukemia in mice, 985

Pancreas, islet-cell tumor of, infusion of 2-deoxy-D-glucose in patients with, 485
Pathogenesis, ovarian tumors, effect of *W*-series of genes, 365
Perylene, derivatives in cigarette smoke, 623
Phosphamidase, histochemical demonstration of, in rat tissue, 523
Phosphatase, acid, histochemical demonstration of in rat, mouse, and human tissue, 523
Phosphohexose isomerase:
serum,
changes in cancer and other diseases, 671
significance of abnormalities in cancer patients, 685
Pituitary gland, role of in carcinogenesis by *N*-2-fluorenyldiacetamide in male rats, 1161
Podophyllotoxin, effect on carotid blood pressure in mice, 585
Polycyclic compounds *see* Hydrocarbons
Polysaccharides (bacterial), *Serratia marcescens*, effect on carotid blood pressure in mice, 585
Protein:
iron-containing, response to iron and cobalt administration in tumor-bearing animals, 879
synthesis, effect of X irradiation on, in rat intestine, 63
Pulmonary *see* Lung tumors
Pyrene, content in cigarette-smoke condensates, 1, 557, 623
Pyruvic acid, in tissue-culture fluids during growth of NCTC 929 cells, 429

Radiation *see* Radioactive materials; X irradiation
Radioactive materials *see also* Tracer studies:
radiochromium (Cr^{51}), erythrocytes labeled with, in study of anemia of tumor-bearing animals, 1099
radioiron, distribution of Fe^{59} in tumor-bearing animals after injection of labeled erythrocytes, 641
Reticulum-cell sarcoma, P329, morphologic progression of, *in vivo* and *in vitro*, 753

Sarcoma(s) *see also* Ascites tumors; Lymphoid tumors; Reticulum-cell sarcoma; Walker carcinosarcoma 256
——— MSWB, and its variants, serological, cytological, and transplantation study of, 885
chromosomes of, produced by injection of tissue-culture cell strains (high and low sarcoma-producing) into mice, 729
Serum, immune, heterologous against HeLa cells tested *in vivo* and *in vitro*, 541
Skin tumor(s), carcinogenesis, in mice painted with cigarette-smoke condensates, 557
Smoking (tobacco) *see also* Cigarette smoke:
association of, with lung cancer in women, 825
Spectra, of polynuclear hydrocarbons, 1, 623
Spleen:
cells, intravenous injection of into X-irradiated mice, effect on lymphatic regeneration, 193
injection of, from isologous mouse or rat, effect on survival in lethally irradiated mice, 279
Spread:
of three ascites lymphomas,
in diffusion chambers, 137
tumor and non-tumor-cell populations during, 163
Statistics, Cancer:
gastric cancer, variation in incidence and mortality, 213

Statistics, Cancer—Continued
leukemia, incidence of, evaluation of data relating X-ray exposure to increase in, 383
smoking in relation to lung cancer, 825
Stomach *see also* Gastric tumors; Gastrointestinal tract; Lesions:
grandular, lesions and tumors of, in mice following MCA, 999

Technique(s):
biochemical,
chromatography, paper, for separation of polynuclear aromatic hydrocarbons on acetate paper, 1, 557, 623
biological,
cell volume, measurements of, 961
diffusion chambers,
ascites tumors in, penetration of antibodies into, 657
lymphomas in, 137
genetic methods,
histocompatibility loci, production and analysis of isogenic resistant lines, 843
histochemical,
acid phosphatase and phosphamidase, activity in tissue, azo-dye method with naphthol AS-phosphates for localizing, 523
tissue culture, human mammary tumor, 1131
tumor preservation, by freezing of transplantable canine carcinoma of thyroid tumor, 1149
Therapy *see also* Antitumor agents; Chemotherapy; Lymphoid tumors:
experimental transplanted tumors, 311
Thymus *see also* Lymphoid tumors:
injection of, from isologous mouse or rat, effect on survival in lethally irradiated mice, 279
thymic transplants from parenteral strains into hybrid mice, effect on incidence of leukemia, 1083
Thyroid tumor(s):
influence of age and iodine intake on production of, 1065
transplantable canine carcinoma, preservation of, by freezing, 1149
Tissue culture *see also* Technique—tissue culture:
breast carcinoma, human, 1131
chick liver, embryonic, cytopathogenic effect of RPL12 lymphomatosis virus on, 925

Tissue culture—Continued
chromosome(s),
characteristics of high and low sarcoma-producing cell strains of mouse in, 729
of Chinese hamster, changes in during growth *in vitro*, 393
number and morphology of, in five cell strains, 437
fluid-suspension cultures,
glucose utilization and cell proliferation in, 349
growth curves of mammalian cells in, 331
nutrients,
efficacy of simple addition, as a means of supporting growth of fluid-suspension cultures, 429
glutamine, effect of lack of, on subline 2071 mouse cells in protein-free medium, 611
primary explants *vs.* established strains as tool in evaluating chemotherapeutic agents, 263
proliferation of cells in, influence of inoculum size on, 579
reticulum-cell sarcoma, P329, progressive morphologic alterations during growth *in vitro*, 753
Tobacco *see* Smoking
Toxins (bacterial), endotoxins of *Salmonella typhosa*, inhibition of tumor growth by increase in survival of X-irradiated mice, 311
Tracer studies:
chromium-51-labeled, erythrocytes, in study of anemia of tumor-bearing animals, 1099
iron-59-labeled erythrocytes, distribution of radioiron in tumor-bearing animals, 641
nitrogen-15-labeled glycine, incorporation into nucleic acid and protein of rat intestine after X irradiation, 63

Transplantation *see also* Grafts:
of ascites tumors in diffusion chambers, in mice, 657
genetics of, 843
of homologous tissues, leukemia, in irradiated mice, effect of shielding, 513
host-graft relationship, effect of isologous mouse or (heterologous) rat spleen, thymus, and bone marrow on, after lethal irradiation, 279

Transplantation—Continued
of thymic tissue from parenteral strains into hybrid mice, effect on incidence of leukemia, 1083
tumor, serology and cytology of MSWB sarcoma and its variant sublines in relation to, 885
Tumor:
progression,
morphologic alterations in reticulum-cell sarcoma, P329, *in vivo* and *in vitro*, 753
serology and cytology of MSWB sarcoma and its variant sublines in relation to, 885

Urethan (ethyl carbamate), in lung carcinogenesis, growth rate of tumors induced in mice, 595

Vanadium, effect of on cholesterol biosynthesis, 1109

Virus *see also* Mammary-tumor agent:
of avian lymphomatosis, RPL12, cytopathogenic effects of, in embryonic chick-liver tissue cultures and in chick embryo, 925
lack of evidence of, in DBA/2 leukemic tissue, 1083

Walker carcinosarcoma 256, iron and cobalt effects on iron-containing proteins of host, 879

X irradiation:
in carcinogenesis,
leukemia incidence in man, evaluation of data relating exposure to incidence, 383
effects on,
epithelium of rat, intestinal, morphology, and mitotic rate in relation to time and dose, 17
jejunum, rat, studied with ultraviolet microscope, 813
nucleic acid and protein synthesis in relation to cell division, 63
resistance to homologous leukemia by spleen and marrow shielding, 513
immunity studies of tissue-host reactions following, production of agglutinins by injected hematopoietic cells in irradiated host, 697
injury,
protection against,
by homologous hematopoietic cells, genetics of, 697
lymphatic regeneration after injection of brei of spleen and bone marrow, 193
lymphoid and myeloid tissues of donor and host, role in, 279
whole body, effect of shielding spleen or femur, 513
lymphoid tumors, treatment of, 1117
tumor regression following, in conjunction with bacterial endotoxin, 311

U. S. GOVERNMENT PRINTING OFFICE: 1958